**YEAR 8: Acids & Bases** Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**COMPUTER TASKS**

Go to [www.delicious.com/wsc\_year8](http://www.delicious.com/wsc_year8)

**TASK ONE**

Select Science Spot (http://sciencespot.net/Pages/kdzchem3.html)

Choose “VL Acids and Bases” (http://www.visionlearning.com/library/module\_viewer.php?mid=58)

**Site: Vision Learning – Acids and Bases**

|  |
| --- |
| 1. What latin term does acid come from? |
| 1. Who first described acids and bases? |
| 1. How did he define: |
| * 1. Acids |
|  |
|  |
| * 1. Bases |
|  |
|  |
|  |

Fill in the table below:

|  |  |  |
| --- | --- | --- |
|  | **pH** | **Example** |
| Acids | 0 | HCl |
| \_ | Stomach acid |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
|  | Milk |
| Neutral | 7 | Pure water |
| \_\_\_\_\_ |  | Egg whites |
| 9 |  |
| 10 |  |
| 11 |  |
|  | Mineral lime - Ca(OH)2 |
|  | Drano® |
|  | NaOH |

**TASK 2: “BBC Bite Size”**

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Select BBC KS3 Bitesize http://www.bbc.co.uk/schools/ks3bitesize/science/chemical\_material\_behaviour/acids\_bases\_metals/activity.shtml

Play the video file – sound off and subtitles on

Answer the following questions

**1. What does this hazard symbol mean?  
**

**corrosive  
irritant  
harmful**

**2. Which of these acids is most likely to be dangerous?**

**citric acid  
carbonic acid  
hydrochloric acid**

**3. Which statement about bases is true?**

**they are all alkalis  
they can neutralise acids  
they are all soluble**

**4. Which statement about alkalis is true?**

**they are all bases  
they cannot neutralise acids  
they are all insoluble**

**5. What happens to litmus paper in acidic solutions?**

**red litmus turns blue  
blue litmus turns red  
yellow litmus turns green**

**6. Universal indicator solution is usually green to begin with. What does this mean?**

**it is acidic  
it is alkaline  
it is neutral**

**7. A liquid has a pH of 7.5 - what does this mean?**

**it is weakly acidic  
it is weakly alkaline  
it is neutral**

**8. A liquid has a pH of 1 - what does this mean?**

**it must be sodium hydroxide solution  
it is strongly acidic  
it is weakly acidic**

**9. What products are formed when a metal oxide reacts with an acid?**

**a salt only  
a salt and water  
a salt, water and carbon dioxide**

**10. What products are formed when a metal carbonate reacts with an acid?**

**a salt only  
a salt and water  
a salt, water and carbon dioxide**

**11. Farmers use lime to neutralise their soils. What sort of substance is lime?**

**a base  
an acid  
a sharp tasting drink**

**12. Which acid could be used to make ammonium nitrate (a type of fertiliser)?**

**hydrochloric acid  
sulfuric acid  
nitric acid**

**13. Which salt is made when copper oxide and sulfuric acid react together?**

**copper sulfate  
copper sulfuroxide  
copper sulfide**

**14. Which gas is produced when magnesium reacts with hydrochloric acid?**

**carbon dioxide  
oxygen  
hydrogen**

**TASK 3: Acids Alkalis and Neutralisation**

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Select the link for Acids Alkalis and Neutralisation (http://www.bgfl.org/bgfl/custom/resources\_ftp/client\_ftp/ks3/science/acids/index.htm)

Choose Litmus Reactions, fill in your name, and fill in the following table

Make your prediction first (task 1 table might help) and then test

|  |  |  |
| --- | --- | --- |
| **Substance** | **Prediction (blue/no change/red)** | **Test (blue/no change/red)** |
| Vinegar |  |  |
| Water |  |  |
| Baking Powder |  |  |
| Alka Seltzer |  |  |
| Cola |  |  |
| Lemon Juice |  |  |
| Tea |  |  |
| Oven Cleaner |  |  |
| Battery Acid |  |  |

Return to Acids Alkalis and Neutralisation page (select home top right corner) – no need to print

Choose Universal Indicator, fill in your name and fill in the following table

Make your prediction first (task 1 table might help) and then test

|  |  |  |
| --- | --- | --- |
| **Substance** | **pH Prediction** | **Test** |
| Vinegar |  |  |
| Water |  |  |
| Baking Powder |  |  |
| Alka Seltzer |  |  |
| Cola |  |  |
| Lemon Juice |  |  |
| Tea |  |  |
| Oven Cleaner |  |  |
| Battery Acid |  |  |

**TASK 4: Choose “ALIEN JUICE BAR”**

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Select Science Spot (http://sciencespot.net/Pages/kdzchem3.html)

Select Alien Juice Bar (pH) (http://sv.berkeley.edu/showcase/flash/juicebar.html)

**Challenge 1 -** Click the button for Challenge 1 to learn more about acids and bases.

1. Press start
2. Click the cup with the purple juice in it and drag it to the different liquids to check the pH.
3. What happens to the colour in each one?

Lemon Juice - \_\_\_\_\_\_\_\_\_\_\_\_\_ Window cleaner - \_\_\_\_\_\_\_\_\_\_\_\_\_ Water - \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Drag each liquid to the correct shelf before clicking the “Check Me” lever.
2. Click the “Test More” button under the lever. When you are finished checking all of those liquids, click the Check Me” lever. Record results into table on the next page.

|  |  |  |  |
| --- | --- | --- | --- |
| **JUICES** | **Prediction – Do you think it is an acid or base???** | **COLOUR** | **ACID or BASE** |
| Distilled water |  |  |  |
| Coffee |  |  |  |
| Mouthwash |  |  |  |
| Cough medicine |  |  |  |
| Liquid soap |  |  |  |
| Orange juice |  |  |  |
| Toothpaste juice |  |  |  |
| Soda pop |  |  |  |
| Tea |  |  |  |

1. Once you get them all correct, click the “continue” button to return to the main menu.

**Challenge 2 -** Click the button for Challenge 2 to use your knowledge of acids and bases.

(1) Read the directions before clicking the “Start” button!

(2) Tips for the Flying Cabbage ... If you are not sure if a liquid is an acid or base, click and drag the cup of cabbage juice to the bottle to test the pH. Click and drag the bottle of liquid to the clear cup in front of the alien to pour a drink.

(3) How did you do? If you kept everyone alive, click the “Main Menu” button. If you didn’t keep everyone alive, click the “Try Again” button.

**Challenge 3 -** Click the button for Challenge 3 to test your knowledge of acids and bases.

(1) Click and drag the cup of cabbage juice to each drink on the tray to check the pH.

(2) To change the pH of a liquid, click a bottle of liquid from the shelf and drag it to a glass. Watch the pH increase or decrease.

(3) If you need a lower/higher reading, keep adding acids/bases until the pH is in the correct range. Once all the drinks are correct, you will see a “Continue” button. Click it to move on to the next set of drinks. Continue adding acids and bases to the drinks until you get the pH at the correct level. **HINT**: For this section, neutral equals anything between 6.80 and 7.20!

(4) Which acid and base caused the biggest changes in pH? (Based on one click and drag!)

Acid - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Base - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_